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SEAT OF THE VIRUS IN ARGENTINE ENCEPHALOMYELITIS OF THE EQUIDAE (EXPERIMENTAL ILLNESS)

Comptes Rendus de la Societe de Biologie
(Reports of the Society of Biology)
Vol. CXXI, 1936, pages 429-431

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and J. Bailly

The central nervous system is the seat par excellence of the virus of experimental encephalomyelitis of the Equidae (the Argentinean stock having acquired at the Institut Pasteur de Tanger [Pasteur Institute of Tangiers] the characters of the California stock).[1] In the dog and the rabbit, the virus is encountered with, it seems, an equal virulence in all the segments of the cerebral-spinal axis: Ammon's horn, chiasma of the optic nerves, quadrigeminal anterior tumors; white substance of the orbital lobes and of the ceiling of the lateral ventricle; arbor vitae of the cerebellum; pyramids of the neck of the bulb, dorsal marrow, lumbar marrow, etc. In our experiments, guinea pigs inoculated in the brain with an emulsion of nerve substance taken from these various regions were all stricken with encephalomyelitis, without exception. Furthermore, the animals inoculated, under strictly similar conditions, with a marrow taken on the one hand from immediately behind the neck of the bulk, and on the other, from immediately in front of the tail of the horse, contracted the disease and succumbed within closely identical periods.

In rabbits which have died from encephalomyelitis, it is very easy to detect the presence of the virus in the large peripheral nerves. The sciatic and the median almost always prove to be virulent.

The encephalomyelitis virus is capable of being found in the blood. We have detected it in paraplegic horses, in samples of blood

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1. C.R. de la Soc. de Biol., Vol. CCX, 1935, pages 983 and 1067.

from the jugular vein taken three days before death; in the guinea pig, in the blood taken during life by puncture of the right auricle, etc. Most of the time, whether made at the beginning of paralysis, during the critical stage, during the preagonal stage, or after death, the experiments carried out with guinea pigs, rabbits, rats, or donkeys, for the purpose of revealing the presence of the encephalomyelitic virus in the blood, have yielded a negative result.

This rarity of the encephalomyelitic virus in the blood explains why the research intended to show the presence of the virus in the organs, although carried out on select animals and following the most sensible procedures, have also yielded negative results almost all the time. This was the case with the liver (rat, guinea pig, rabbit, donkey, dog), the spleen (rat, guinea pig, donkey, dog), the kidney (donkey, guinea pig). In contrast -- and this creates an analogy between the American encephalomyelitis and the disease of Borna --, the experiments undertaken with either the parotid gland or the subrenal capsules have almost always met with success. The following facts are typical in this regard.

Experiment I -- A rabbit stricken with encephalomyelitis was killed a little before the presumed instant of natural death. The parotids were extracted and finely emulsified in physiological saline. From this emulsion, a rabbit received 0.4 cc under the duramater and 5 cc in the crural muscles. On 7 October (the eight day), the animal showed a generalized paretic state without clear localization. Paralysis was complete on 8 October. Death on 10 October.

Experiment II -- On 30 September, the parotids of a rabbit who had just died from encephalomyelitis were emulsified and inoculated in a rabbit and a guinea pig: 0.2 cc under the duramater and 5 cc in the crural muscles. On 7 October (seventh day), the two animals showed a drunken gait; the next day, they were incapable of moving about. On the 10th, they succumbed to the progress of the paralysis.

Experiment III -- On 28 September, a guinea pig was inoculated under the duramater and in the thick part of the crural muscles with the product of the crushing of the subrenal capsules of a congener which had just died of encephalomyelitis. On 4 October (sixth day), the animal showed a characteristic paralysis. On 5 October, paralysis of the hind legs was complete and extended to the lumbar region. The animal was completely paralyzed on 6 October and died on the 7th.

Experiment IV -- On 29 September, the subrenal capsules of a rabbit dead from encephalomyelitis were emulsified in physiological saline. From this emulsion, a guinea pig and a rabbit received 0.2 cc under the duramater and 5 cc in the crural muscles. On 6 October

(seventh day), the guinea pig showed paraplegia, and the evolution of a progressive ascending paralysis which brought on death on 9 October (tenth day) was observed. The rabbit, paretic on 8 October (ninth day), was completely paralyzed on 9 October and died on the 10th (eleventh day).

We add that the urine of horses, rabbits, or guinea pigs, inoculated even in large doses (20/40 cc) under the skin or in the thick part of the crural muscles of the rabbit, has never yielded positive results (ten experiments). This absence of the virus in the urine explains in part why the virus of Argentine encephalomyelitis does not lend itself, the way other more or less closely related viruses do, to infection by way of the environment. All the experiments which we have carried out in order to achieve this have produced negative results.